

Class Assignment: Enthalpy Change of Reaction/Formation From Enthalpy Change of Combustion

1. Enthalpy changes of combustion can be used to determine enthalpy changes of formation. The following equation represents the enthalpy change of formation of butane.

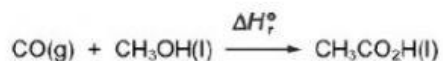


By using the following standard enthalpy of combustion data, what is the value of the standard enthalpy change of formation, ΔH_f° , for this reaction?

compound	$\Delta H_c^\circ / \text{kJ mol}^{-1}$
carbon	-394
hydrogen	-286
butane	-2877

Answer:

2. Carbon monoxide and methanol can react together to form ethanoic acid.



Standard enthalpy changes of combustion are given in the table.

compound	standard enthalpy change of combustion, ΔH_c°
CO	-283.0 kJ mol ⁻¹
CH ₃ OH	-726.0 kJ mol ⁻¹
CH ₃ CO ₂ H	-874.1 kJ mol ⁻¹

What is the value for ΔH_f° for the reaction between carbon monoxide and methanol?

Answer: